



# S.N. VITA Ltd

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## SUPERALLOY SN254698 SPECIFICATIONS

### 1. Overview

SN254698 is a Ni base alloy with high durable strength and good comprehensive property at temperatures ranging from 550°C up to 800°C, and it has the equivalent properties to that of Wasp alloy.

#### 1.1. Material Grade

SN254698

#### 1.2. Similar grades

XH73МБТЮ-ВД (ЭИ698-ВД) (Russia)

#### 1.3. Technical Standard material

GB/T 14992-2005 - Classification and designation for superalloys and high temp. intermetallic materials  
GJB 5280-2004 - Specification for superalloy disk forgings for aero-engine

#### 1.4. Chemical composition

C	Cr	Ni	Mo	Al	Ti	Fe	Nb	B	Ce	No more than			
										Si	Mn	P	S
≤0.08	13.0~16.0	Rest	2.8~3.2	1.3~1.7	2.35~2.75	≤2.0	1.8~2.2	≤0.005	≤0.005	≤0.6	≤0.4	0.015	0.007

#### 1.5. Heat Treatment

State	Solution treatment	Aging
Disk forging	1120°C, 8h, air-cooled; 1000°C, 4h, air-cooled	775°C, 16h, air-cooled

#### 1.6. Product Form

These alloys available in bar and disks.

#### 1.7. Applications

Mostly used for turbine disks (750°C).

## 2. Physical Properties

### 2.1. Thermal Performance

2.1.1. Melting Temperature - 1340~1365°C

2.1.2. Thermal Conductivity -  $\lambda = 10.3 \text{ W}/(\text{m}\cdot^\circ\text{C})$

2.1.3. Coefficient of linear expansion -  $\alpha = 12.1110 \cdot 10^{-6} \cdot ^\circ\text{C}^{-1}$

2.2. Density -  $\rho = 8.31 \text{ g}/\text{cm}^3$



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## 3. Mechanical Properties

### 3.1. Performance of technical standards

Standard	State	Tensile Properties						Hardness [HBS10/3000]	high temperature persistent		
		$\theta/^\circ\text{C}$	$\sigma_b/\text{MPa}$	$\sigma_{0.2}/\text{MPa}$	$\delta_5/\%$	$\varphi/\%$	Impact		$\theta/^\circ\text{C}$	$\sigma/\text{MPa}$	Time [h]
GJB 5280	Disk forging	20	1120	705	17	19	39	3.30~3.60	750	412	50
										363	100

### 3.2. Durability and creep properties

#### 3.2.1. Durability properties

Material	$\theta/^\circ\text{C}$	$\sigma/\text{MPa}$	Time [hours]	$\delta_5/\%$
Square steel	750	412	184	20

#### 3.2.2. High temperature creep properties

Material	$\theta/^\circ\text{C}$	$\sigma/\text{MPa}$	Time [hours]	$\delta_5/\%$
Square steel	700	412	100	0.2

#### 3.2.3. Fatigue performance

Material	$\theta/^\circ\text{C}$	$\sigma/\text{MPa}$	N [no. of times]
Square steel	750	362	>10E7

### 3.3. Elastic properties

#### 3.3.1. Modulus of elasticity

Dynamic [ $E_D$ ] modulus of elasticity at different temperatures.

$^\circ\text{C}$	20	450
$E_D$ [GPa]	221	199